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HABITS OF BUTTERFLIES.[1]

BY W. H. EDWARDS.

I. On certain habits of Heliconia charitonia Linn., a species of butterfly found in Florida.—According to Wallace and Bates all species of Heliconidæ have so obnoxious a smell and taste by reason of the pungent odor which seems to pervade their systems, that birds will not touch them, though their flight is so early and their abundance so great all through the tropics, that they could be caught more easily than most other butterflies. So lizards and monkeys refuse them.

Heliconia charitonia is common at Indian river, being a forest species, and Dr. Wm. Wittfield observed three of these butterflies fixed upon a chrysalis of the same species in the forest last May. He watched them off and on for two days, and tried to drive them away, picking them off with the fingers, but they returned to the same position, and remained there till the morning of the third day, when he found all gone, and the empty shell of the chrysalis only remaining.

This led him to raise another chrysalis, which he placed in a flower bed frequented by *H. charitonia.* Soon some butterflies came and touched the chrysalis, but its wriggling caused them to move off. Two days before the imago was due, and before discoloration of the shell of the chrysalis had commenced, they attached themselves again, two or three at a time, and as before, would only yield to force, and then returned. On the third day all had gone and the empty shell remained. Query: Did the butterflies, aware of their own immunity from persecution, gather for the purpose of guarding the chrysalis from attacks of birds or other enemies, just at the time when it was most defenceless; or were they attracted by sexual desire, the imago perhaps being of the opposite sex to the butterflies gathered upon it?[2]

II. On an alleged abnormal peculiarity in the history of Argynnis myrina.—Mr. Scudder, in the AMERICAN NATURALIST, 1872, related "The Curious History of a Butterfly," and stated that in both *A. myrina* and *bellona* occurred a phenomenon which he considered unique among butterflies; there being two sets of individuals, each following its own cycle of changes, apparently with as little to do with the other set as if it were a different species; each set having its own distinct seasons, and thus giving rise to the apparition of two or three successive broods in the course of the year. He regarded these series as distinct from each other as any two species, and offering differences such as usually characterize somewhat distinct genera.

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[1] Read at the Cincinnati meeting of the Amer. Assoc. Adv. Science.

[2] Later observations show that the chrysalids guarded as related are female, and the assembled butterflies are always male.

All this was based upon what the author stated to be a fact, that the eggs of these species are wholly undeveloped at the birth of the female, and that they are not developed for weeks or months, so that what appears to be two successive broods of the butterflies cannot possibly be such, as one cannot be descended from the other. Any one, in fact, must have come direct from the second brood back of it and not the first.

Mr. Edwards ascertained in 1875, '76, and '77, by breeding *A. myrina* in the Catskill mountains (in part, bringing the eggs or caterpillars to Coalburgh, W. Va.) that the foregoing statement was based in error. That the females at birth have fully developed eggs, requiring but impregnation, and that they are laid almost immediately; in fact, two of his butterflies paired a few hours after both emerged from the chrysalis. Eggs were laid to the number of ninety-three, within forty-eight hours from chrysalis, and they produced caterpillars. Also that other points in Mr. Scudder's curious history were made in error; and his observations were published in the *Canadian Entomologist.* Nevertheless, in his work on Butterflies, Mr. Scudder repeats the same story, with no verification or data whatever, and with no direct allusion to the published refutation.

Mr. Edwards stated that *Thecla henrici* Grote, lays its eggs on the wild plum at the base of the plum stalks; the young larvæ climb the stalks and eat a hole in the side of the small plum, and thereafter continued to feed on the inner part of the plum, going to another when the first is excavated. The species is single-brooded, appearing in April, about the time the wild plum trees are coming into bloom (in West Virginia).

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EDITORS' TABLE.

EDITORS: A. S. PACKARD, JR., AND E. D. COPE.

——The popular view as to the definition of science, if we are to judge from the subject matter of "scientific columns" in our newspapers and magazines, is somewhat wide of the mark. It is evidently not well understood that the application of science to practical life is not science itself, and should be treated of under a